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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/583,604

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Takuya Tsukagoshi

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EXAMINER

LAVARIAS, ARNEL C

ART UNIT

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/583,604	Applicant(s) TSUKAGOSHI ET AL.	
	Examiner Arnel C. Lavarias	Art Unit 2872	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 16 April 2009.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-14 is/are pending in the application.
- 4a) Of the above claim(s) 2-4 and 6-14 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1 and 5 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 16 April 2009 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Drawings

1. The replacement drawings were received on 4/16/09. These drawings are acceptable.

Response to Amendment

2. The amendments to the abstract and specification of the disclosure in the submission filed 4/16/09 are acknowledged and accepted. In view of these amendments, the objections to the specification in Sections 7 and 9 of the Office Action dated 12/16/08 are respectfully withdrawn.
3. The amendments to Claims 1, 5 in the submission filed 4/16/09 are acknowledged and accepted. In view of these amendments, the rejections of Claim 1 under 35 U.S.C. 112, 2nd paragraph, in Section 11 of the Office Action dated 12/16/08, are respectfully withdrawn.

Response to Arguments

4. The Applicants' arguments filed 4/16/09 have been fully considered but they are not persuasive.
5. The Applicants argue that, with respect to Claims 1 and 5, Miyaji fails to teach or reasonably suggest a laser output power of the laser beam being increased in accordance with a decrease in recording sensitivity of the holographic recording medium. The Examiner respectfully disagrees. Miyaji specifically discloses that, in Figures 3-5, the

Art Unit: 2872

photopolymer utilized as the holographic recording medium exhibits a sensitivity that is dependent on the wavelength of incident light (e.g., in Figure 3, red light of 647 nm is used and shows the least sensitivity since a large laser fluence is needed for the photopolymer to exhibit large diffraction efficiencies, whereas in Figure 5, blue light of 488 nm is used and shows the highest sensitivity since a very small laser fluence is needed for the photopolymer exhibit the same large diffraction efficiencies). Further, Miyaji discloses that at each of the three wavelengths, the same exposure time is used (i.e. 28 seconds), while the output of each of the lasers is adjusted based on the sensitivity at that particular wavelength (i.e. at 647 nm, 1.4 mW is used, at 514 nm, 0.71 mW is used, and at 488 nm, 0.25 mW is used). In other words, the laser output power is increased in accordance with those wavelengths that exhibit the lowest sensitivities when recording in the photopolymer. The Applicants appear to be arguing a decrease in recording sensitivity due to a build-up of fluence in a particular location of the recording medium during the exposure time. However, such features are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

6. Claims 1 and 5 are now rejected as follows.

Claim Rejections - 35 USC § 102

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

8. Claim 5 is rejected under 35 U.S.C. 102(b) as being anticipated by Miyaji (JP 07-160183 A), of record.

Miyaji discloses a holographic multiplex recording method (See for example Figure 1) for multiplex-recording (In the instant case, the information is wavelength multiplexed; See 10, 11, 12 in Figure 1) information as a hologram on a holographic recording medium (See for example 3 in Figure 1) using interference fringes of an object beam and a reference beam (See for example light traversing elements 22, 23 to 3 in Figure 1), into which a laser beam is split, wherein, when multiplex-recording the information, a time of exposure to the laser beam per data page is kept constant, and a laser output power of the laser beam is increased in accordance with a decrease in recording sensitivity of the holographic recording medium (See for example Paragraphs 0042, 0049). Miyaji additionally discloses a holographic recording apparatus (See for example Figure 1) for multiplex-recording (In the instant case, the information is wavelength multiplexed; See 10, 11, 12 in Figure 1) information as a hologram on a holographic recording medium (See for example 3 in Figure 1) using interference fringes of an object beam and a reference beam (See for example light traversing elements 22, 23 to 3 in Figure 1), into which a laser beam is split, wherein, when multiplex-recording the information, a time of

exposure to the laser beam per data page is kept constant, and a laser output power of the laser beam can be increased in accordance with a decrease in recording sensitivity of the holographic recording medium (See for example Paragraphs 0042, 0049).

Claim Rejections - 35 USC § 103

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10. Claim 1 is rejected under 35 U.S.C. 103(a) as being unpatentable over Newswanger et al. (U.S. Patent No. 6806982) in view of Mok et al. (F. H. Mok, M. C. Tackitt, H. M. Stoll, 'Storage of 500 high-resolution holograms in a LiNbO₃ crystal', Opt. Lett., vol. 16, no. 8, April 15, 1991, pp. 605-607.) and Miyaji.

Newswanger et al. discloses a holographic multiplex recording method (See for example Figure 1) for multiplex-recording information as a hologram on a holographic recording medium (See for example 'RP' in Figure 1), the method comprising splitting a laser beam (See for example 110 in Figure 1) into an object beam (See for example 130 in Figure 1) and a reference beam (See for example 140 in Figure 1) by a polarizing beam splitter (See for example 'C1' in Figure 1); modulating the object beam with data in the form of intensity modulation in a spatial light modulator (See for example 'SLM' in Figure 1); projecting the object beam and the reference beam in the holographic recording medium to intersect each other and to produce optical interference in a region

where both the beams intersect each other (See for example 130, 140, 'RP' in Figure 1); and recording the optical interference as diffraction gratings on the holographic recording medium (See 'RP' in Figure 1). Newswanger et al. lacks modulating an incident angle of the reference beam relative to the holographic recording medium; and when multiplex-recording the information, a time of exposure to the laser beam per data page is kept constant, and a laser output power of the laser beam is increased in accordance with a decrease in recording sensitivity of the holographic recording medium. However, Mok et al. teaches the well-known angle multiplexing scheme for multiplexing plural holograms on a holographic recording medium (See for example Abstract; Figure 1). In particular, Mok et al. teaches that the incidence angle of the reference beam is changed relative to the recording medium so angle multiplexing may be performed (See specifically Figure 1). Thus, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modulate the incident angle of the reference beam relative to the holographic recording medium, as taught by Mok et al., in the recording method of Newswanger et al., for the purpose of angle multiplexing plural holograms onto the same recording medium, thus increasing the storage capacity of the recording medium.

The combined teachings of Newswanger et al. and Mok et al. lack when multiplex-recording the information, a time of exposure to the laser beam per data page is kept constant, and a laser output power of the laser beam is increased in accordance with a decrease in recording sensitivity of the holographic recording medium. However, Miyaji teaches a holographic multiplex recording method (See for example Figure 1) for multiplex-recording (In the instant case, the information is wavelength multiplexed; See

Art Unit: 2872

10, 11, 12 in Figure 1) information as a hologram on a holographic recording medium (See for example 3 in Figure 1) using interference fringes of an object beam and a reference beam (See for example light traversing elements 22, 23 to 3 in Figure 1), into which a laser beam is split, wherein, when multiplex-recording the information, a time of exposure to the laser beam per data page is kept constant, and a laser output power of the laser beam is increased in accordance with a decrease in recording sensitivity of the holographic recording medium (See for example Paragraphs 0042, 0049). Thus, it would have been obvious to one having ordinary skill in the art at the time the invention was made that when multiplex-recording the information, a time of exposure to the laser beam per data page is kept constant, and a laser output power of the laser beam is increased in accordance with a decrease in recording sensitivity of the holographic recording medium, as taught by Miyaji, in the recording method of Newswanger et al. and Mok et al., for the purpose of minimizing unwanted color tones from the recording medium, while allowing holograms recorded with different wavelengths to be recorded with equal strength and diffraction efficiency within the recording medium.

Conclusion

11. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

Art Unit: 2872

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Arnel C. Lavarias whose telephone number is 571-272-2315. The examiner can normally be reached on M-F 10:00 AM - 6:30 PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephone B. Allen can be reached on 571-272-2434. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 2872

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Arnel C. Lavarias
Primary Examiner
Group Art Unit 2872
6/10/09

/Arnel C. Lavarias/
Primary Examiner, Art Unit 2872